

be a secondary condition due to acceleration of development.

The 10 plates with 127 figures illustrating Prof. Graber's papers are beautifully executed and are by far the most accurate ever published on the subject. It is to be regretted that Prof. Graber did not introduce larger, clearer and more numerous diagrams. The need of these is especially urgent as it is next to impossible to obtain good surface views

of the fly's egg, and mental reconstruction, even from such excellent sections as those given in the plates, is no easy task for the reader.

It is to be hoped that the next investigator who undertakes the study of the *Musca* egg will make use of the wax reconstruction methods now so successfully employed by workers in other fields of embryology.

W. M. WHEELER.

OENEIS AND ITS EARLY STAGES.

At the last (May) meeting of the Cambridge entomological club Mr. S. H. Scudder spoke of the group of *Oeneides* as one of the most interesting of butterfly genera, partly because (using the word in a restricted sense) there was no other genus of butterflies in which so many species were common to the Old and New Worlds, but more because it is the only genus entirely restricted to high latitudes and altitudes and widely spread in the world. Eight species occurred in Europe-Asia, of which two or three were also found in North America, which possessed besides at least eight or nine species. One would suppose that it would be one of the last with the early stages of whose life we should be acquainted, and this was the case until recently, but now more or less has been published concerning eight of the species, mostly from observations in this country, and it is understood that Mr. W. H. Edwards, to whom most of this advance is due, has full or tolerably complete histories of two or three more.

I had the good fortune, he remarked, to be the first to publish an account of the early stages of one of the species of the genus—*Oeneis semidea*, the only one found in New England,—due to the joint efforts of the late Messrs. Shurtleff and Sanborn and myself, though no one has yet carried the creature through from the egg. Since then most of

the additions to our knowledge of American species have come from Edwards, but Fyles has published the history of *Oe. jutta* to which Fletcher and I have added something, and in Europe, where the same species occurs, Holmgren and Berg. One of the latest known species, *Oe. macounii*, is now almost completely known, thanks to Mr. J. Fletcher, who has published an account of it, and the egg and first larval stage have also been described by Mr. W. Beutenmüller. All that is known of *chryxus*, *iduna*, and *ivalda*, is due entirely to the indefatigable efforts of Mr. Edwards.

Of the European species also, it so chanced that I was the first to publish anything (a year previous to Berg's account of *Oe. jutta*) describing the egg and first larval stage of *Oe. aello*, the alpine species, to which nothing has since been added; and excepting *Oe. jutta*, before referred to, the early stages of only one other species, *Oe. bore*, are known, due to the studies of Sandberg.

Out of sixteen or seventeen species, then, recognized in the northern hemisphere, we now know more or less of the transformations of about half the species not to mention the two or three which Edwards has worked out but not yet published. This is a remarkable showing for a group of butterflies with such a distribution, and brings out several features which are a little puzzling. First, there are two types of surface sculpture in the eggs; the more common is that in

which the more or less sinuous or zigzag ribs form with their interspaces laterally alternating, very similar and equal, angulate elevations and depressions over the sides of the egg; in the other the elevations are more abrupt and rounded and are separated from each other by nearly flat interspaces. The latter type is represented by aello, and, to judge from advance copies of one of his next plates Mr. Edwards has kindly shown me, to a more marked degree by one of the species whose transformations are yet unpublished; the other type includes semidea, jutta, ivalda, iduna, chryxus, and macounii. Second, there are two types of structure in the caterpillars just from the egg, but these two types in no way correspond with those found in the egg. In one, the terminal segment has the two posterior forks produced to more or less blunt points and the notch between them is deep; in the other, these forks are rather broadly truncate and the notch between them slight. To the latter belongs only *Oe. semidea*; to the former, jutta, ivalda, chryxus, macounii, and aello, as well as the unpublished form referred to.

The chrysalids, as might be expected with concealed objects, show little difference, but in the imago a wide diversity exists, especially in the form of the wings and their markings and in the presence or absence of a discal streak upon the upper surface of the fore wings of the male. But it would appear that any division upon these grounds would more or less cut athwart the groups derived from the egg or the juvenile larva, unless it be that the more rounded and less pointed fore wing combined with a lack of ocelli and of sexual adornment and the possession of more densely and profusely haired mid and hind femora in the imago is correlated with the truncate tips of the forks of the last segment in the juvenile larva; in which case the first larval stage of bore and brucei as well as of oeno should, like semidea, show a truncate extremity. Sandberg has described (but insufficiently) the young larva of bore,

and Edwards has raised but not published brucei, so that we shall doubtless soon be able to know whether this is true; if so, it might be well to divide the genus into two groups, to which the subgeneric names of Oeneis and Chionobas might then be given, the former to the latter group, the latter to that of which *Oe. semidea* would be typical.

NOTES.—The second and somewhat tardy part of *Lowne's anatomy etc. of the blow fly* (London, Porter) is even more extended than the first, containing 116 pages and 6 plates besides 17 figures in the text, all the illustrations being very coarse but instructive wood cuts. The part is entirely devoted to the "integumental skeleton of the imago" and is so detailed and so full of comparisons that it almost serves the purpose of a general treatise on entomology. Half a dozen topical bibliographies scattered through the work will be found very useful.

The death is reported of *M. Jules Künckel d'Herculeis*, formerly president of the French entomological society, while carrying on official researches upon the destructive locusts of Algeria. The sensational reports of the press that he was overcome and devoured by locusts is in no way to be credited. The probable truth is that he was overcome by the heat of the desert and died before his body was found, the locusts devouring a portion of his clothing. His superb quarto volume, still incomplete, upon the genus *Volucella*, with its 26 exquisite plates, is practically a treatise on the anatomy of the Diptera and will remain a monument to his technical skill as anatomist and delineator.

Concerning the distribution of *Vanessa cardui*, Mr. Charles Oberthür, in commenting at the April meeting of the French entomological society on Scudder's doubt (Butt. N. E., 478) whether the species is indigenous in French Guiana and in Tahiti, says that as Boisduval neglected to attach any labels to his exotic specimens of this species (excepting one from Madagascar) it is impossible to